



February 2016 Water Supply Briefing

National Weather Service, Northwest River Forecast Center

Telephone Conference: 1-888-819-6075

Pass Code: 79838

Upcoming Briefing Dates:

March 3 – 10 am PST

April 7 – 10 am PDT

May 5 – 10 am PDT

Presentation available after brief at:

www.nwrfc.noaa.gov/presentations/presentations.cgi

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Northwest River Forecast Center

Water Supply Forecasts

www.nwrfc.noaa.gov/ws/



River and Hydrology

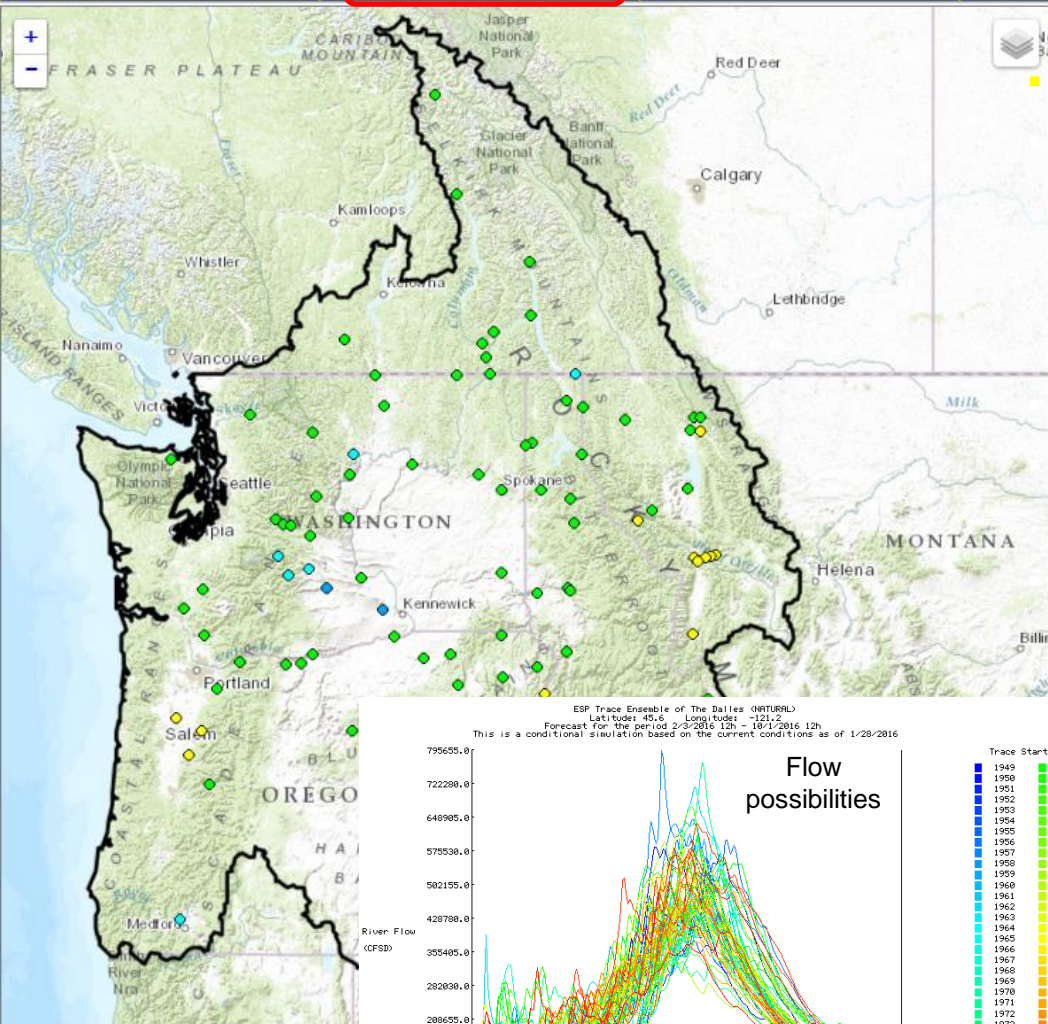
Water Supply

Observations

Weather Forecasts

Climate

NWRFC



ESP: Ensemble Streamflow Prediction

Official ESP water supply products include:

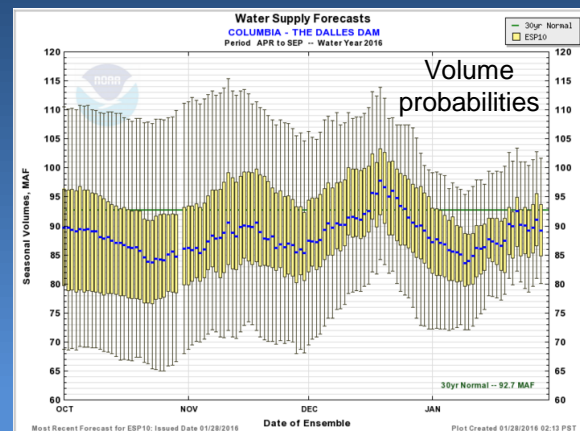
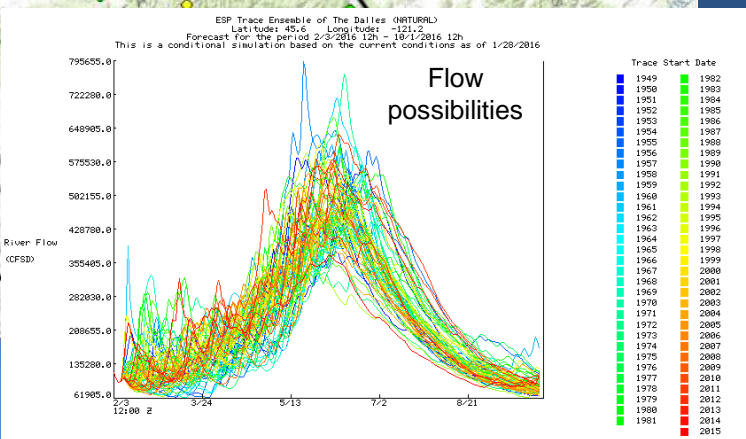
- 10 days of quantitative precipitation forecast (QPF)
- 10 days of quantitative temperature forecast (QTF)
- Traces of historical precipitation and temperatures appended thereafter

NWRFC also offers 5- and 0-day ESP products

Forecasts are updated daily

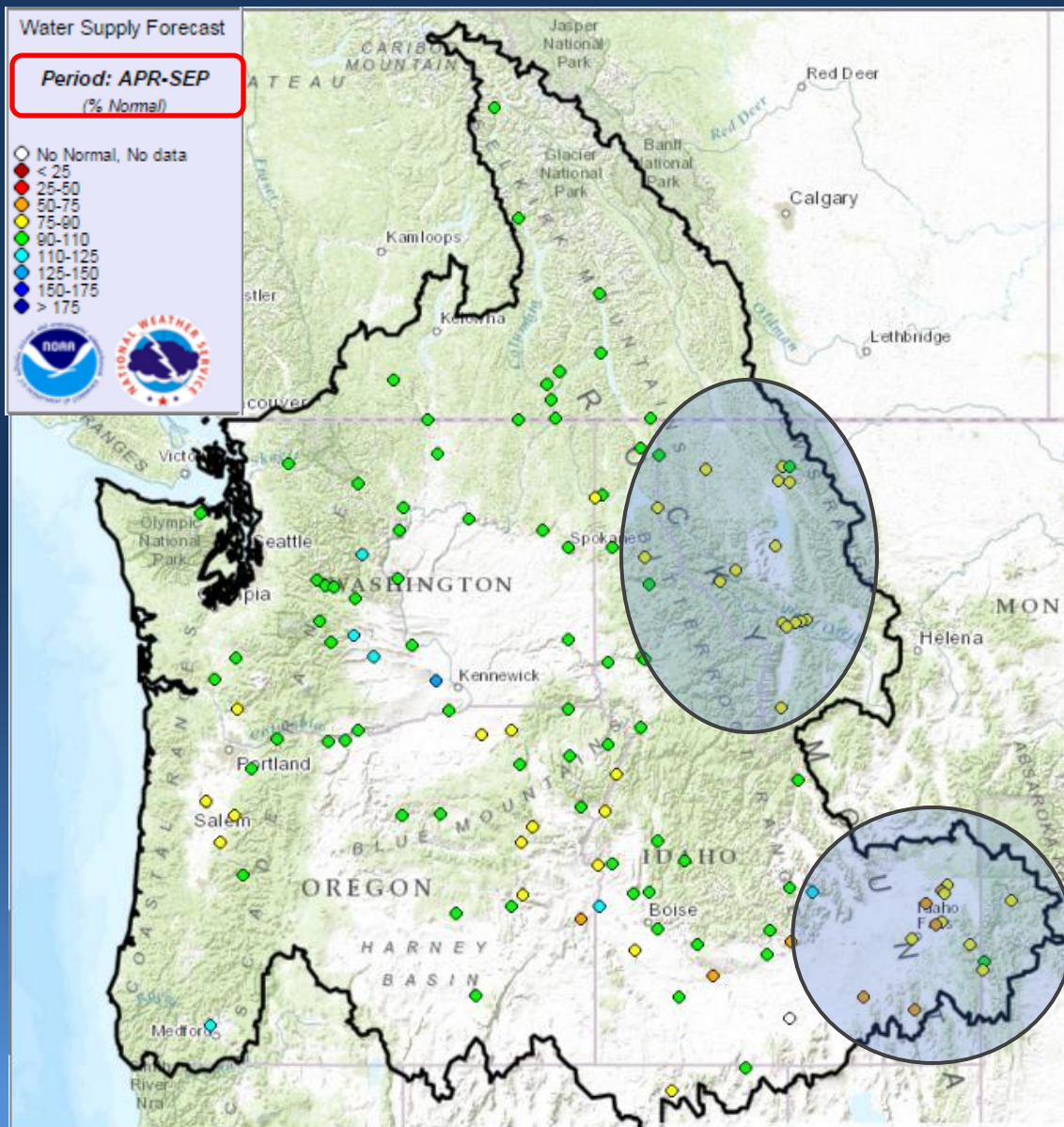
- Model states and observed runoff updated continuously

Forecasts are compared to 30-year runoff volume normals (1981-2010)



Water Supply Summary

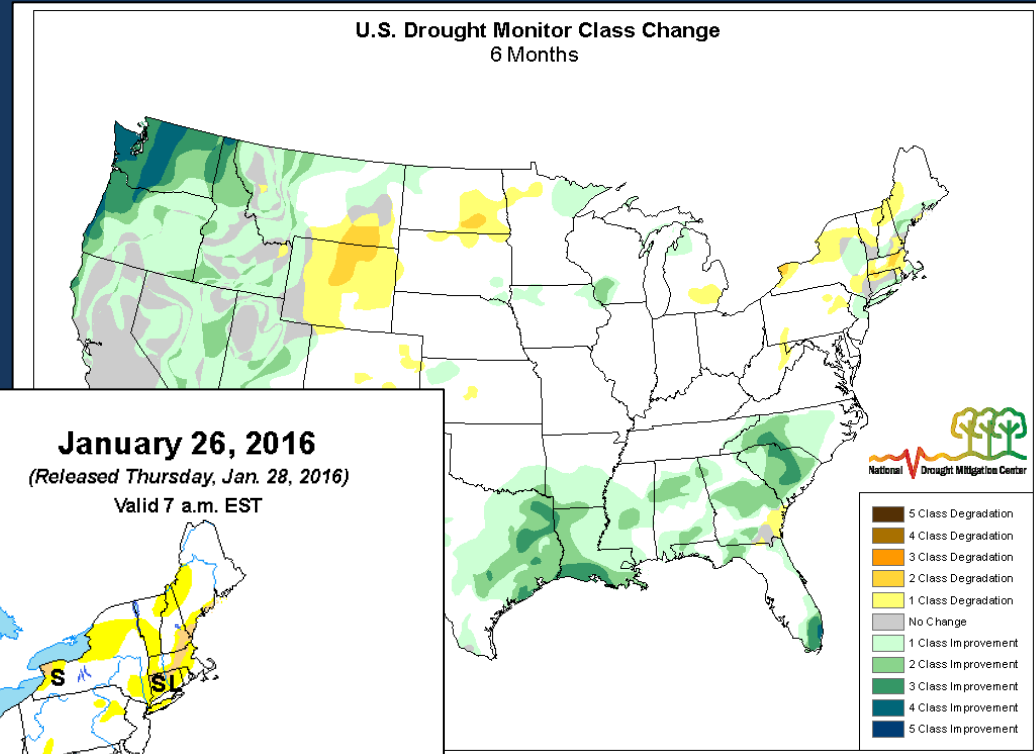
www.nwrfc.noaa.gov/ws/



- Overall, near normal conditions forecasted across the Columbia River Basin and coastal drainages
 - Decent contributions from BC, central Idaho, the Cascades
 - Above normal precipitation has helped most watersheds west of the Cascades recover
- Lower contributions along the Rockies and eastern Oregon
 - Dry soils
 - Warm temperatures
 - Less precipitation

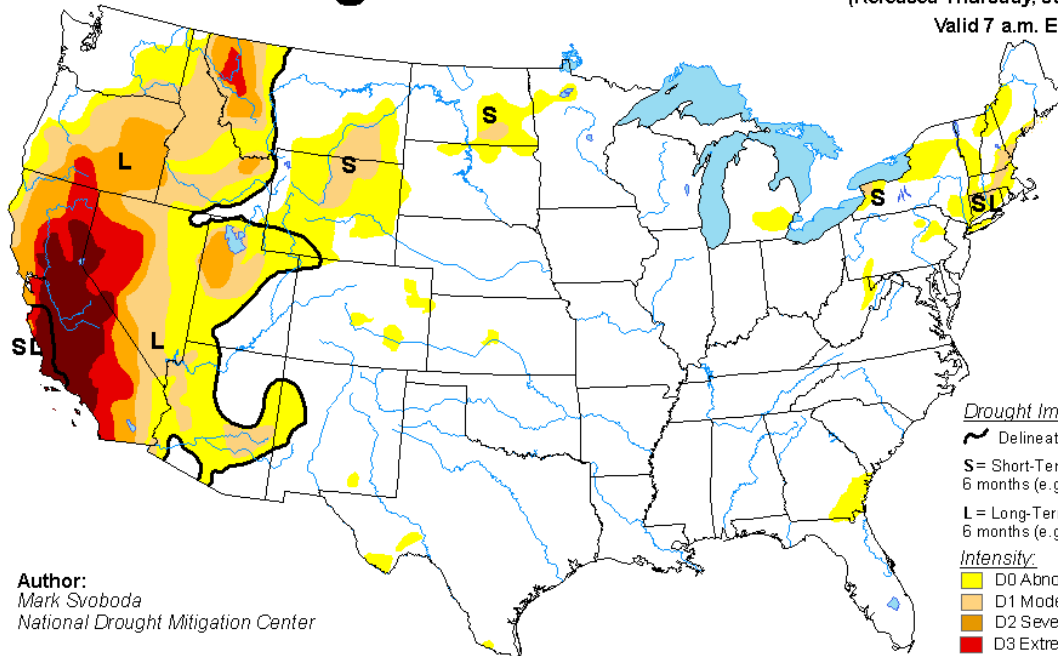
Drought Summary

- Conditions have improved, but drought does persist across much of the CRB
- Drought extinguished along most of the west-side



U.S. Drought Monitor

January 26, 2016
(Released Thursday, Jan. 28, 2016)
Valid 7 a.m. EST



Author:
Mark Svoboda
National Drought Mitigation Center



Volume Forecast Inputs



■ Observed Conditions:

- Precipitation
- Temperature
- Snowpack
- Runoff

Hydrologic
model states

■ Future Conditions:

- 10, 5, or 0 days of QPF and QTF (deterministic)
- Traces of historical precipitation and temperature appended thereafter (probabilistic)

Forcings → hydrologic models → streamflows → volumes



Observed Seasonal Precipitation

www.nwrfc.noaa.gov/water_supply/wy_summary



River and Hydrology | **Water Supply** | **Observed**

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Enter NWS ID:

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Map Overlays

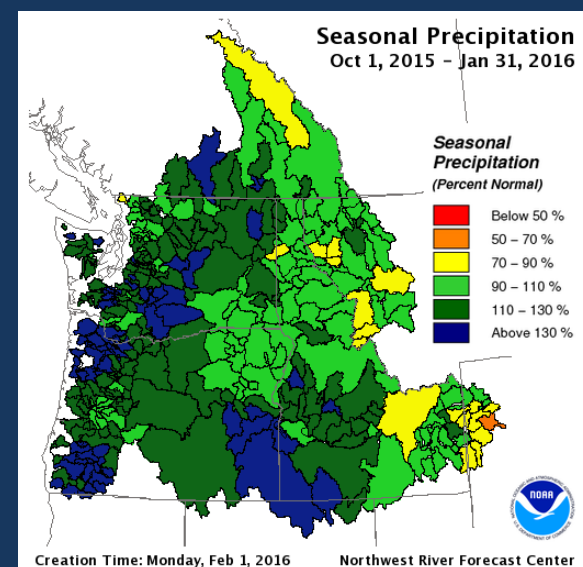
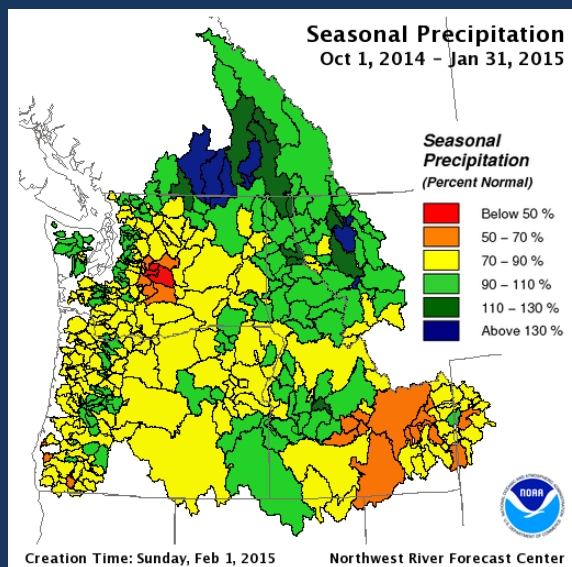
☒ NWRFC Boundary
☐ NWRFC Basins
☐ NWS HSAs
☐ Counties

Map Type

☒ ESP WS Status
☐ ESP WS % of Avg
☐ Runoff Status

Water Supply

[Forecast Map](#)
[Forecast Listing](#)
[Forecast Report](#)
[Forecast Text Product](#)
[Live Briefing Schedule](#)
[Precipitation/Temperature](#)
[Snow](#)
[Runoff](#)
[Runoff Text Product](#)
[ESP Natural Volumes](#)
[New ESP Natural Forecast **BETA**](#)
[ESP Interactive](#)
[Documentation](#)



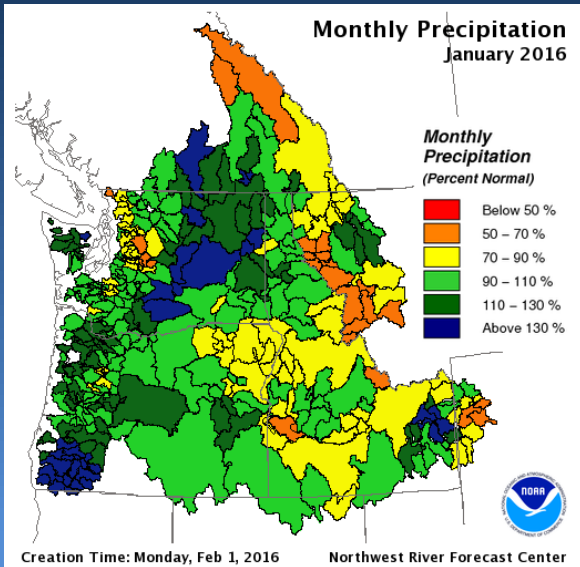
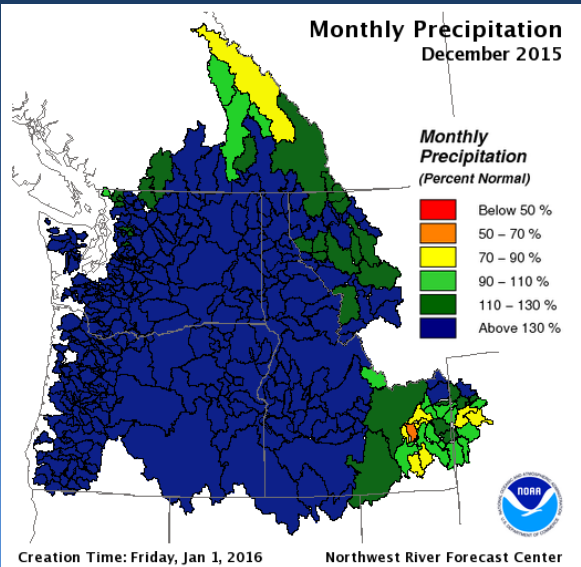
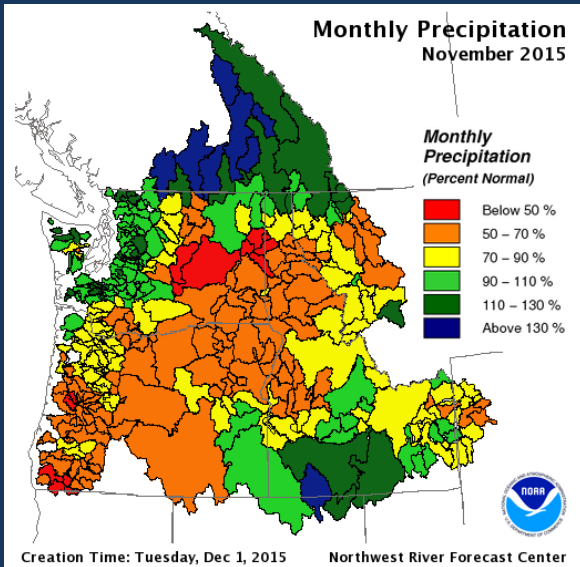
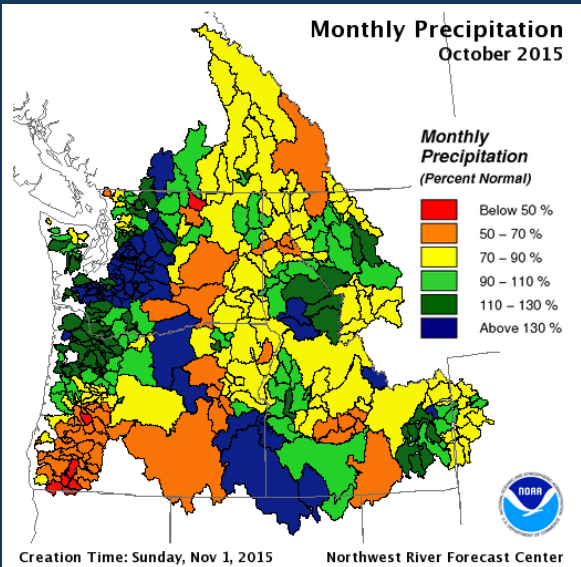
DIVISION NAME	WY 2015 % NORM	WY 2016 % NORM	WY 2016 OBS
Columbia River Basin above Grand Coulee Dam	105	101	17 in
Snake River Basin above Ice Harbor Dam	87	109	10 in
Middle Columbia Lower Tributaries	84	118	14 in
Columbia River Basin above The Dalles Dam	93	108	13 in
*Western Washington	88	117	59 in
*Western Oregon	84	125	45 in

*Average of contributing divisions



Observed Monthly Precipitation

www.nwrfc.noaa.gov/water_supply/wy_summary



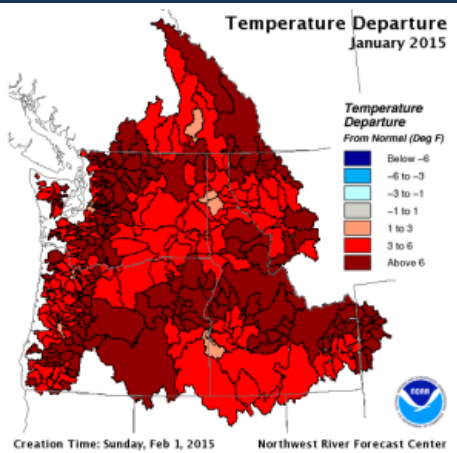
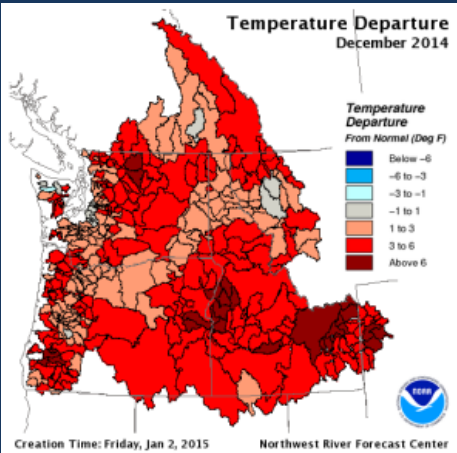
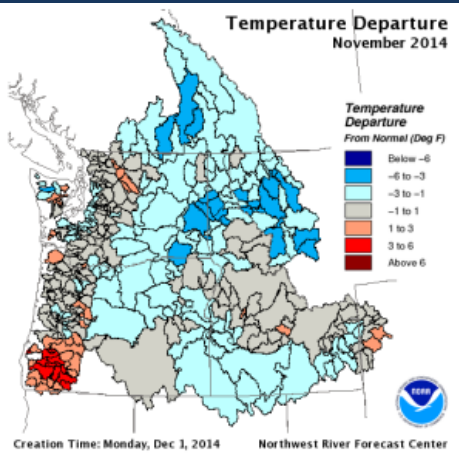
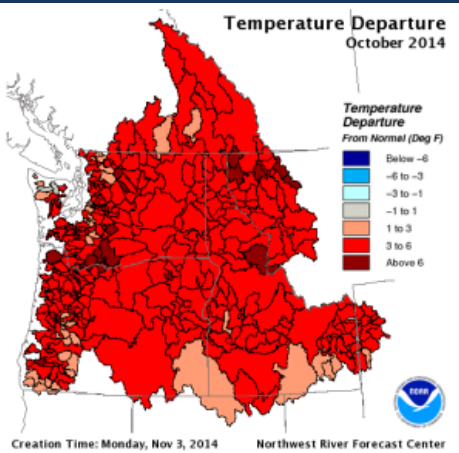


Observed Monthly Temperatures

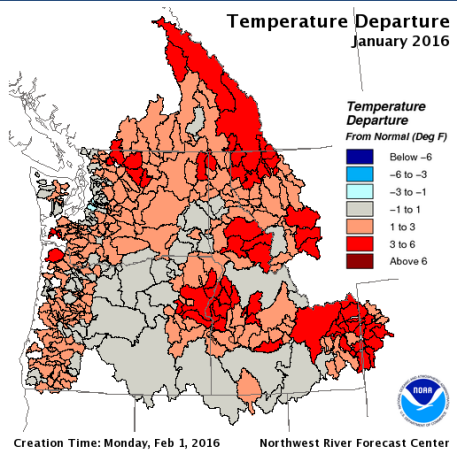
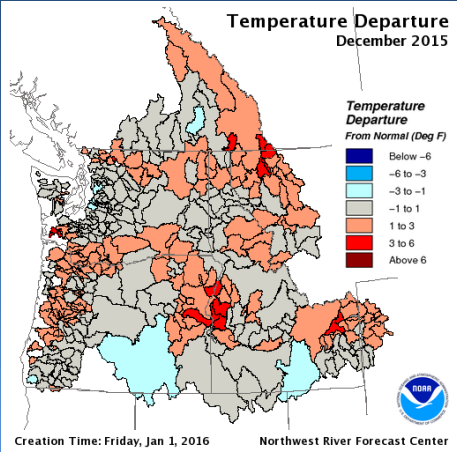
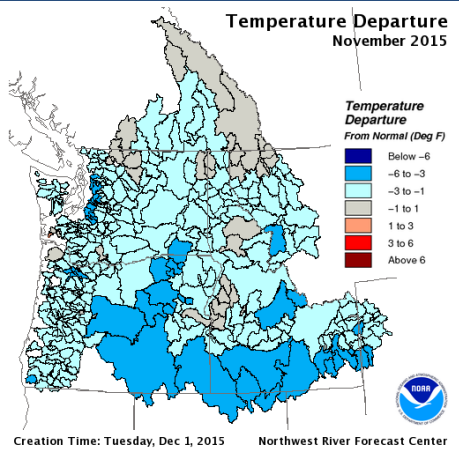
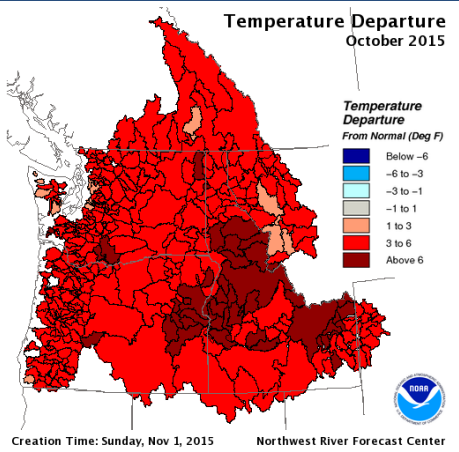
www.nwrfc.noaa.gov/water_supply/wy_summary



2015

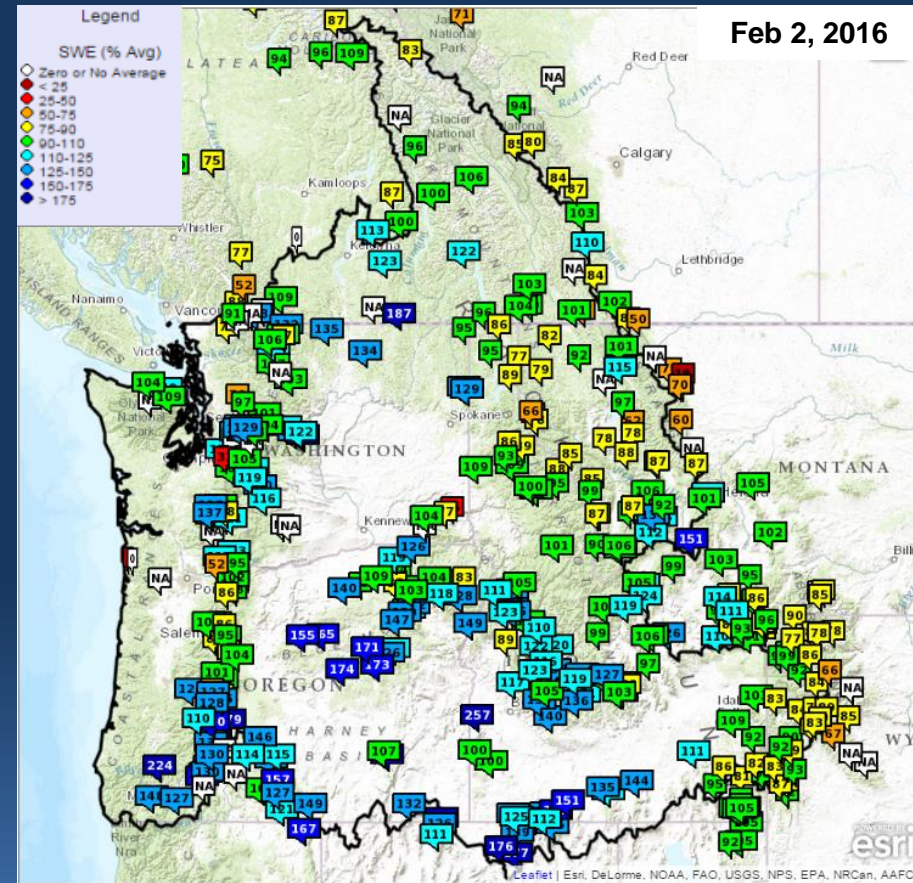
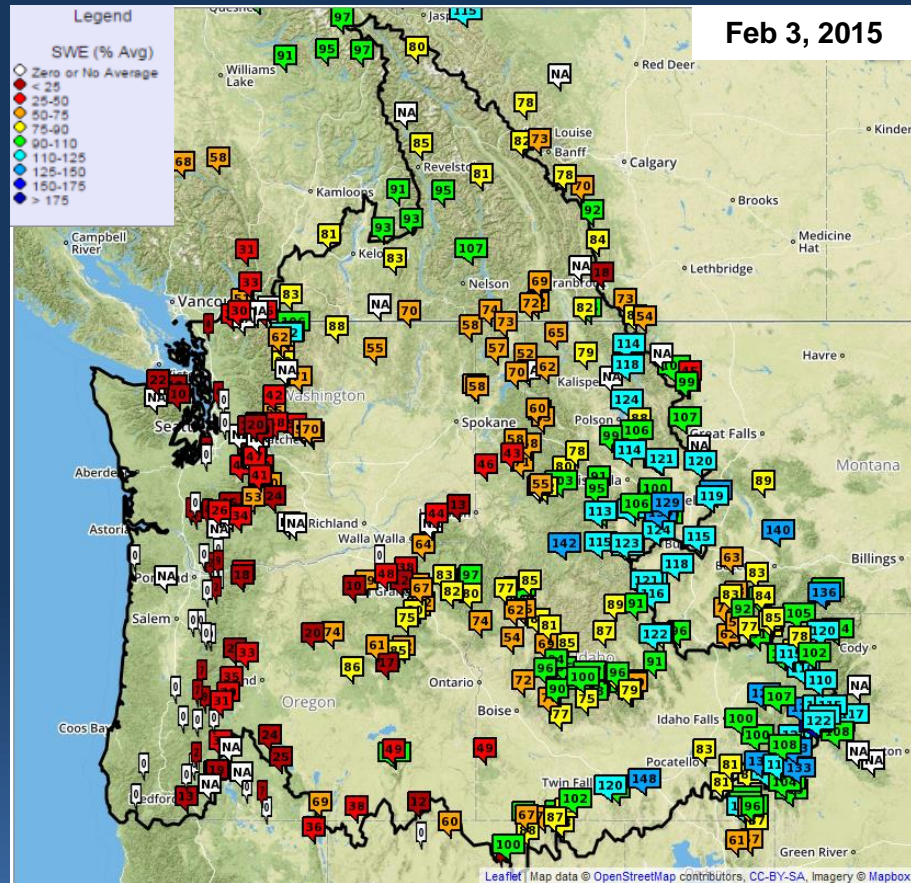


2016



Observed Snowpack Conditions

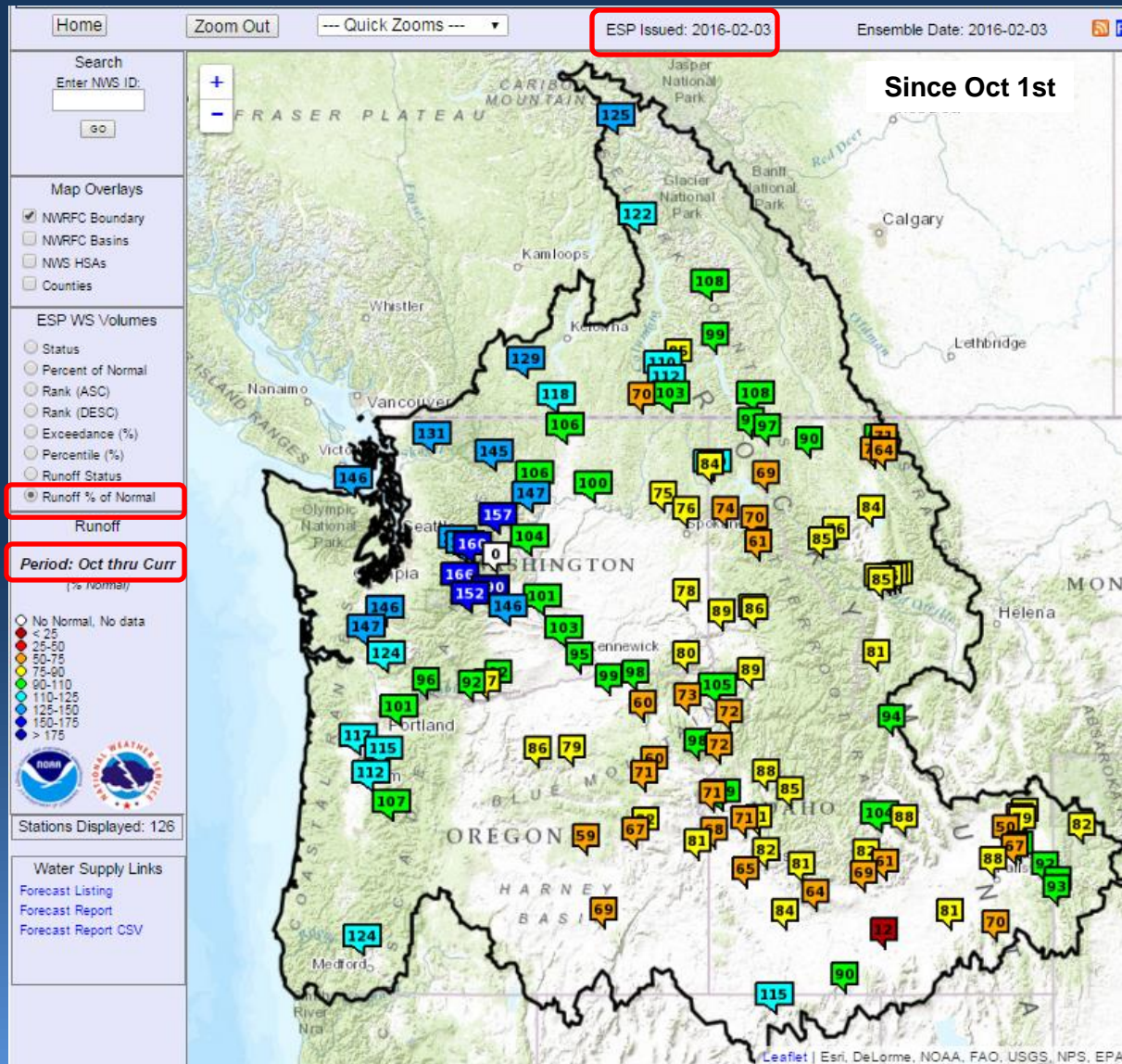
www.nwrfc.noaa.gov/snow



- Much more snow in Washington and Oregon thus far this year
- Below normal snow along the Rockies could impact late season runoff (if conditions do not improve)

Runoff Conditions

www.nwrfc.noaa.gov/ws/



LOCATION

OCT 1 – FEB 3
% NORM

Columbia River – Arrow Lakes	111
Kootenai River – Queens Bay	100
Clark Fork River – Plains	76
Columbia River – Grand Coulee Dam	101
SNAKE RIVER – Shelley	89
SNAKE RIVER – Brownlee Dam	73
SNAKE RIVER – Lower Granite	79
John Day River – Service Creek	88
Yakima River – Parker	148
Columbia River – The Dalles Dam	93
Skagit River – Concrete	132
Dungeness River – Sequim	147
Willamette River – Salem	118
Rogue River – Raygold	125

*Observed runoff adjusted for upstream storage projects



Volume Forecast Inputs

■ Observed Conditions:

- Precipitation
- Temperature
- Snowpack
- Runoff



Hydrologic
model states

■ Future Conditions:

- 10, 5, or 0 days of QPF and QTF (deterministic)
- Traces of historical precipitation and temperature appended thereafter (probabilistic)

Forcings → hydrologic models → streamflows → volumes

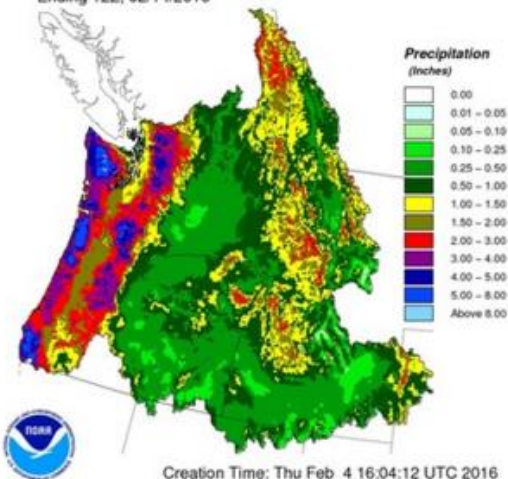
Short-Range Weather Forecasts

www.nwrfc.noaa.gov/water_supply/wy_summary

10 Day Forecast Precipitation: Volume Analysis

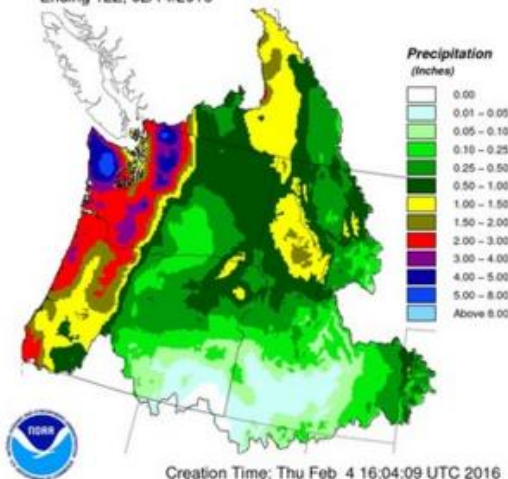
10 Day Precipitation Climatology

Ending 12Z, 02/14/2016



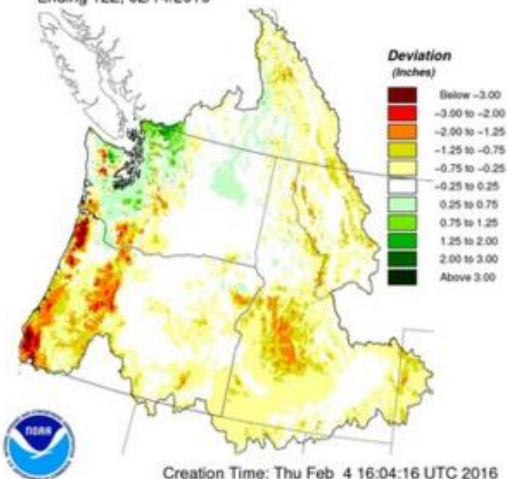
10 Day QPF

Ending 12Z, 02/14/2016



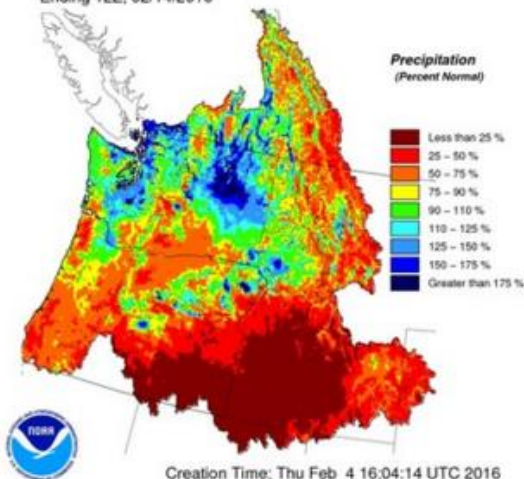
10 Day QPF (Deviation from Climatology)

Ending 12Z, 02/14/2016

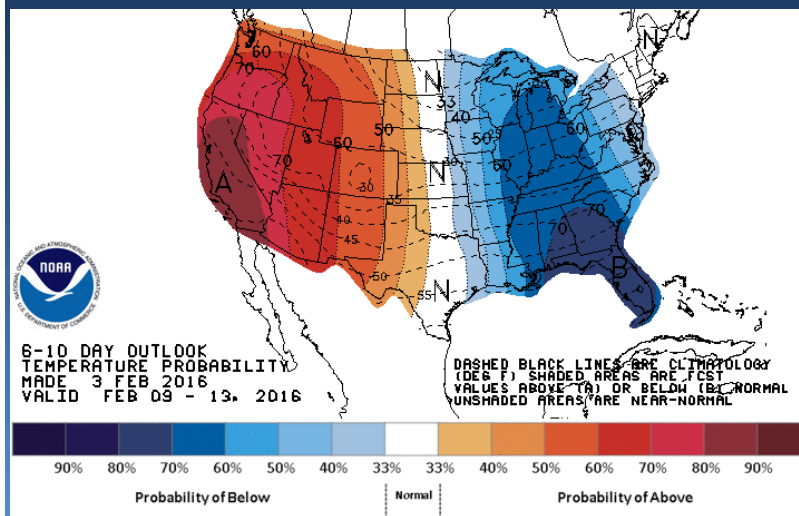


10 Day QPF (Percent of Climatology)

Ending 12Z, 02/14/2016

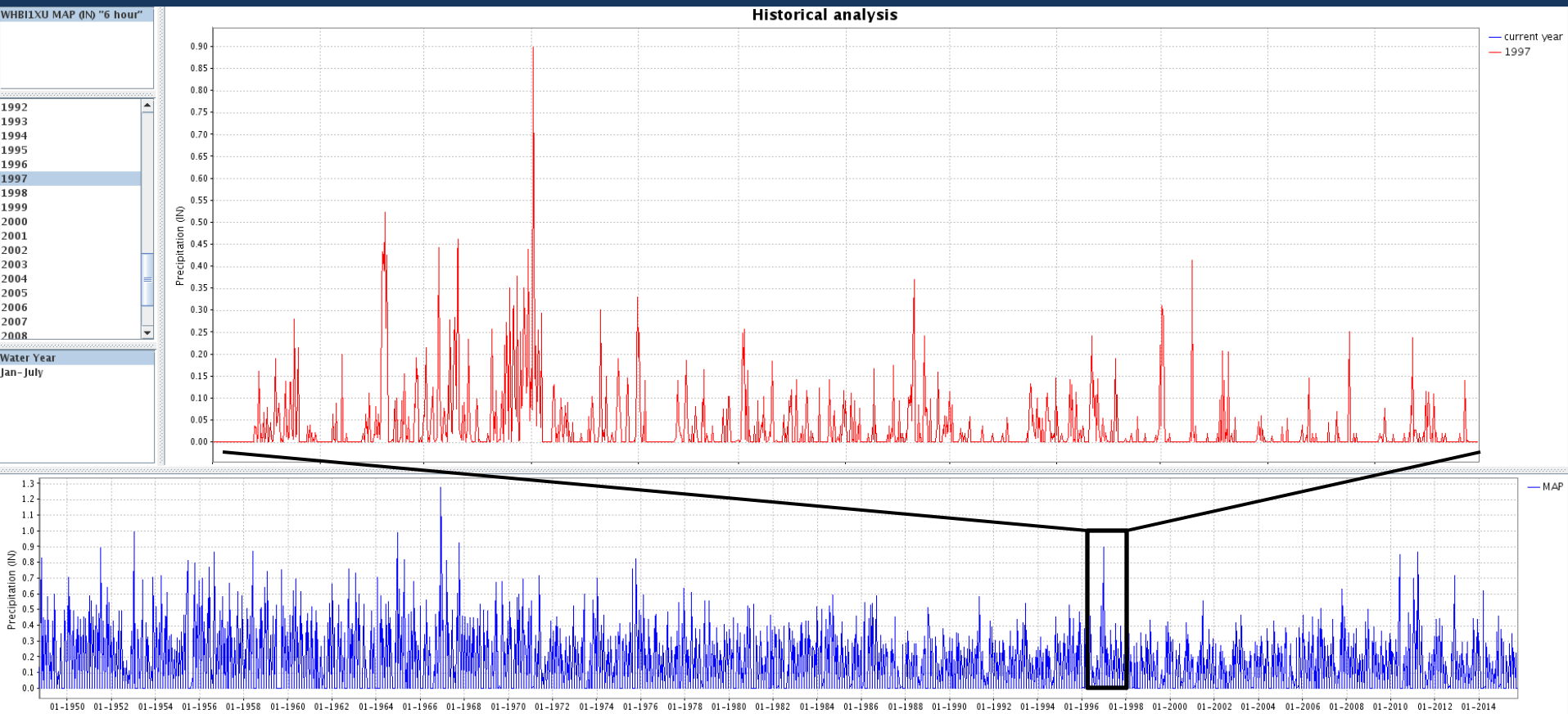


- Relatively dry conditions forecasted over much of the east-side
- Ridge expected to develop this weekend, and remain into next week
- Temperatures expected to be above normal
- Not anticipating any significant snow melt though



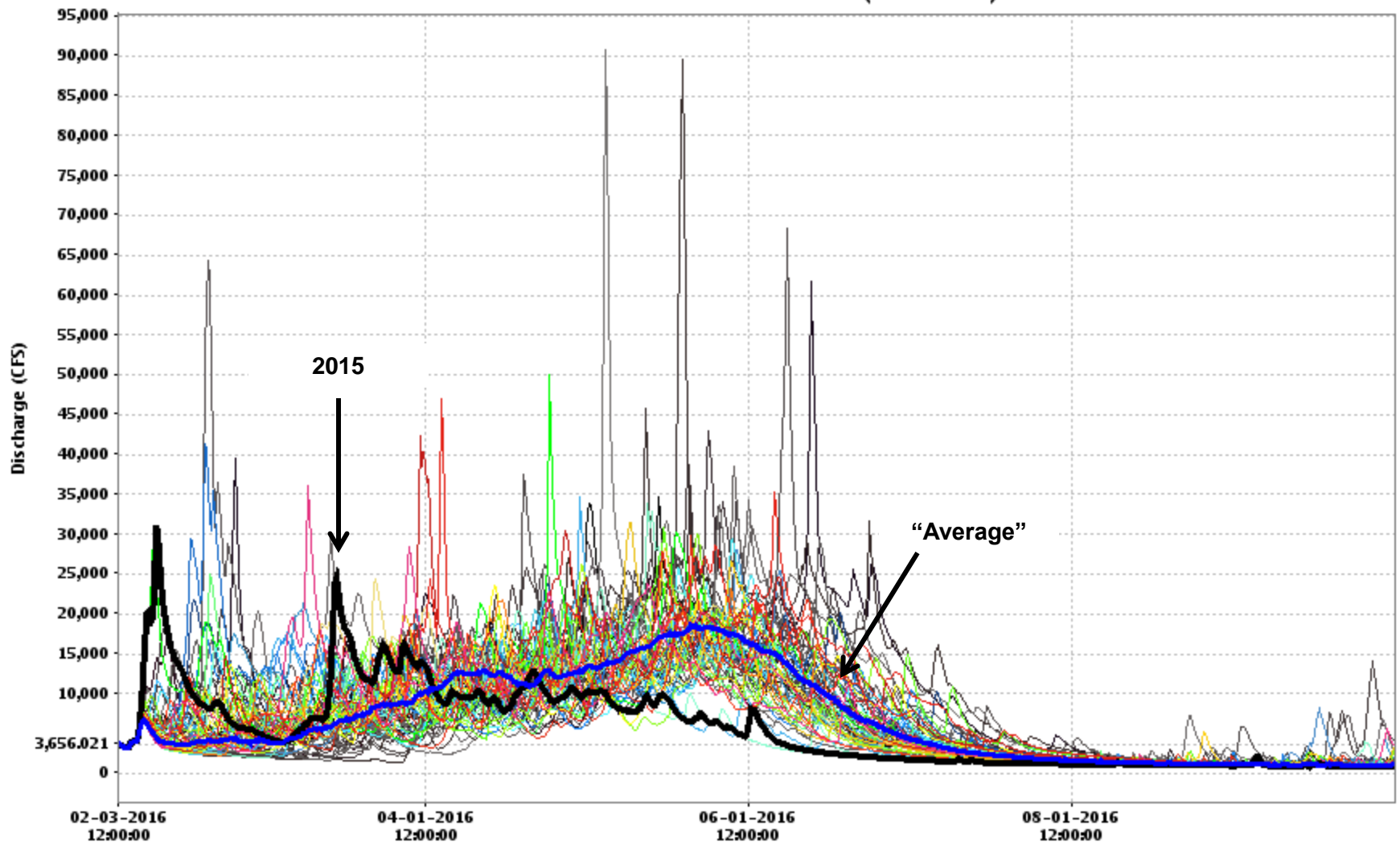
Long-Range Weather Possibilities

- Probabilistic guidance used beyond 10 days
- Unique sets (years) of historical observations
 - Precipitation and temperature data for every year of historical record (1949 – 2015)
 - One year of historical data comprises one forcing trace



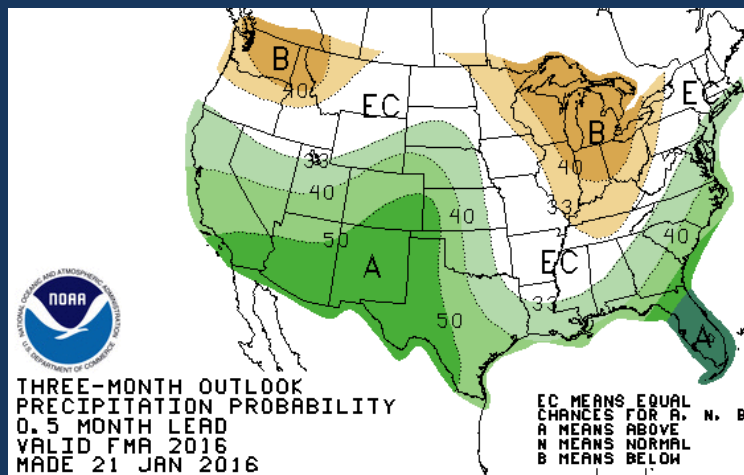
Hydrologic Possibilities

DWRI1 - Dworshak Dam - ESP (INFLOW)

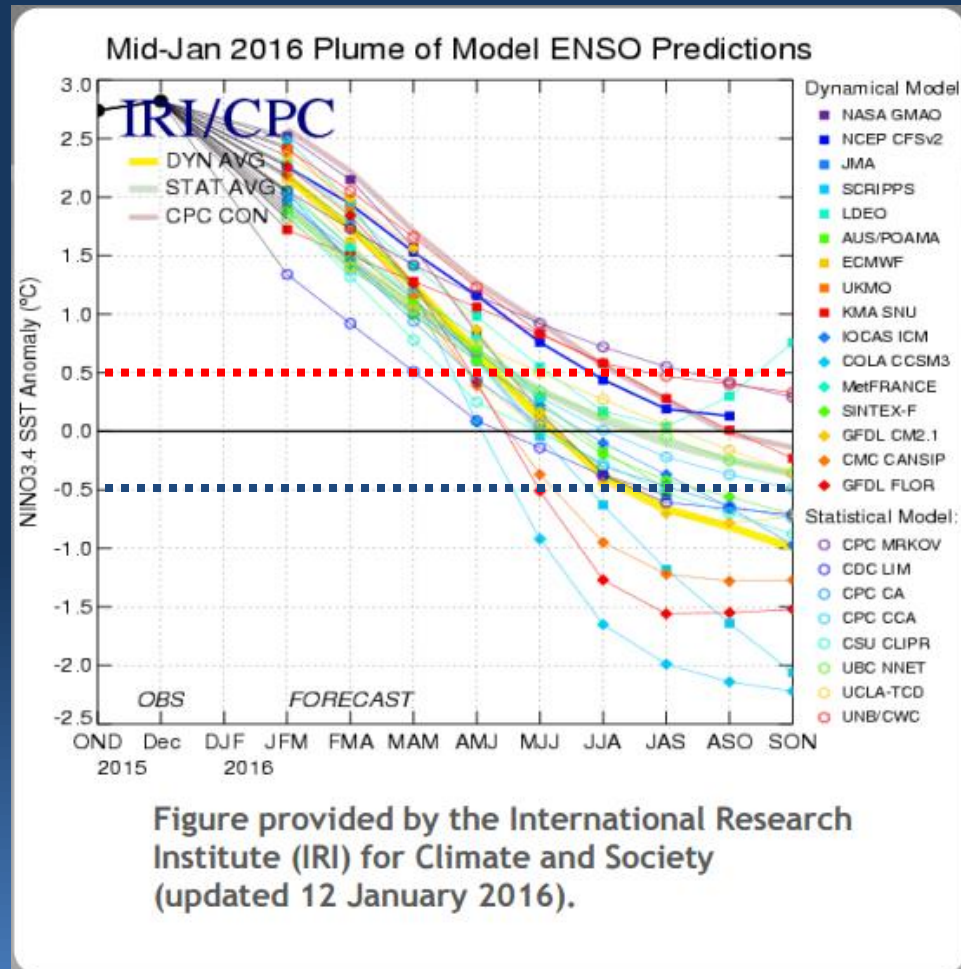
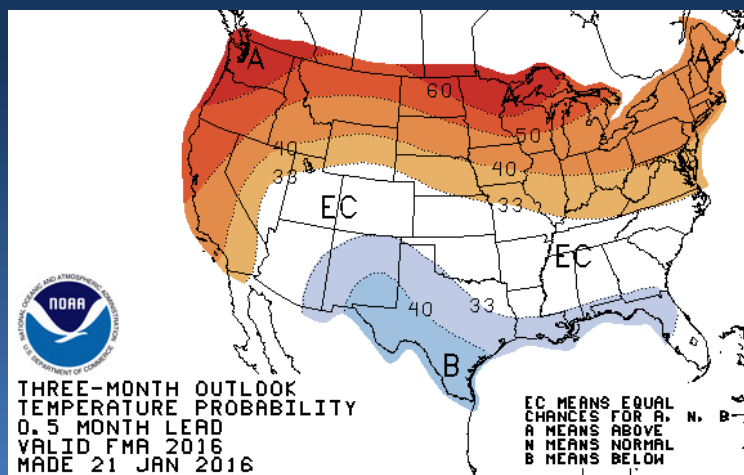


Three Month Outlook

Precipitation



Temperature

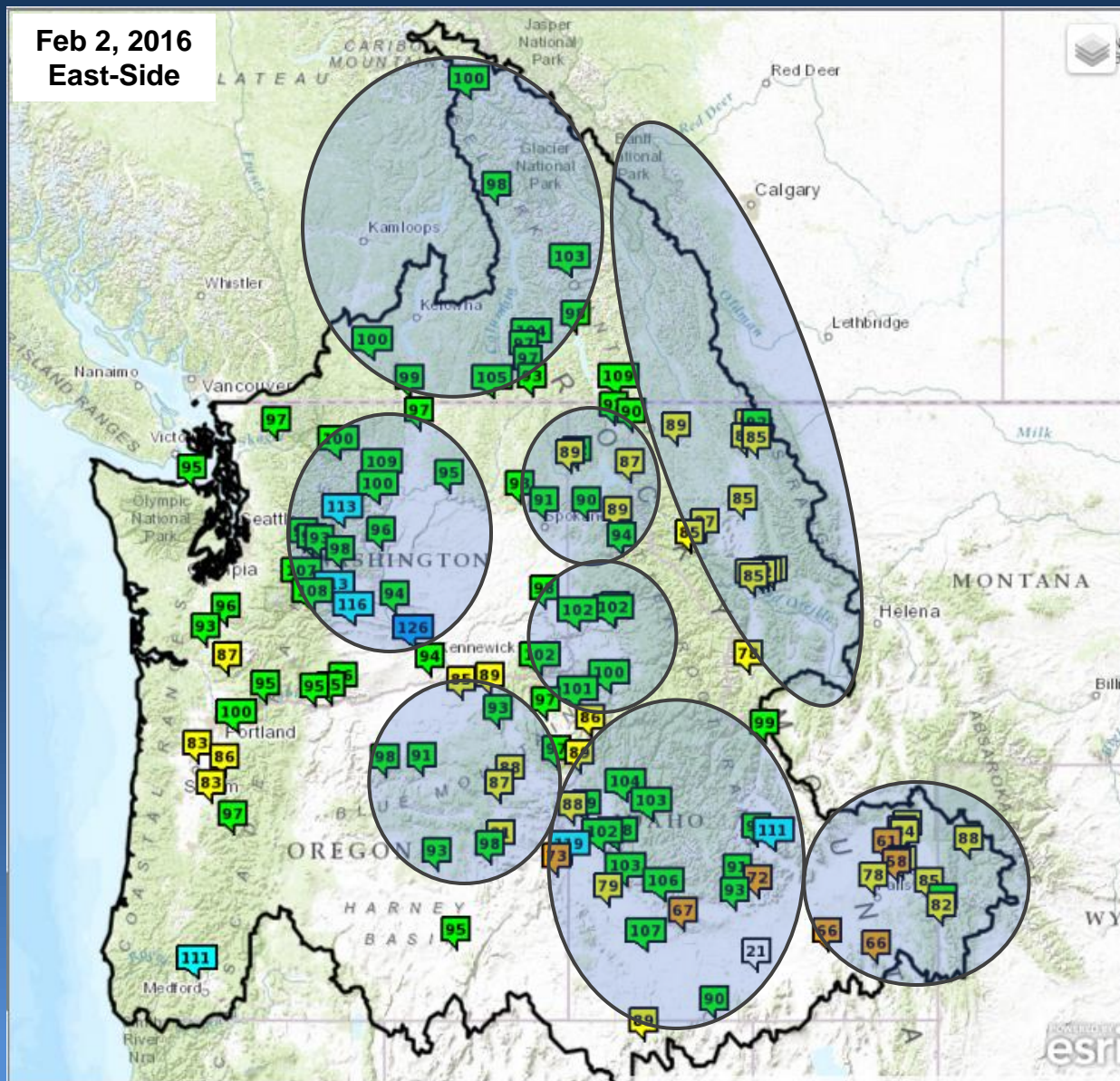


- Increased probability that warm temperatures will continue
- Precipitation may be light along northern tier
- El Niño conditions still present, but expected to slide into neutral (or La Niña) conditions this summer

Official Water Supply Forecasts

www.nwrfc.noaa.gov/ws/

Feb 2, 2016
East-Side



EAST-SIDE LOCATION

APR – SEP
% NORM

Columbia River –
Arrow Lakes

97

Kootenai River –
Libby Dam

89

Clark Fork –
Cabinet Gorge Dam

87

Spokane River –
Spokane

91

Columbia River –
Grand Coulee Dam

95

Snake River –
Shelley

78

Snake River –
Brownlee Dam

89

Clearwater River –
Spalding

102

Snake River – Lower
Granite Dam

98

John Day River –
Service Creek

98

Yakima River –
Parker

116

Columbia River –
The Dalles Dam

95

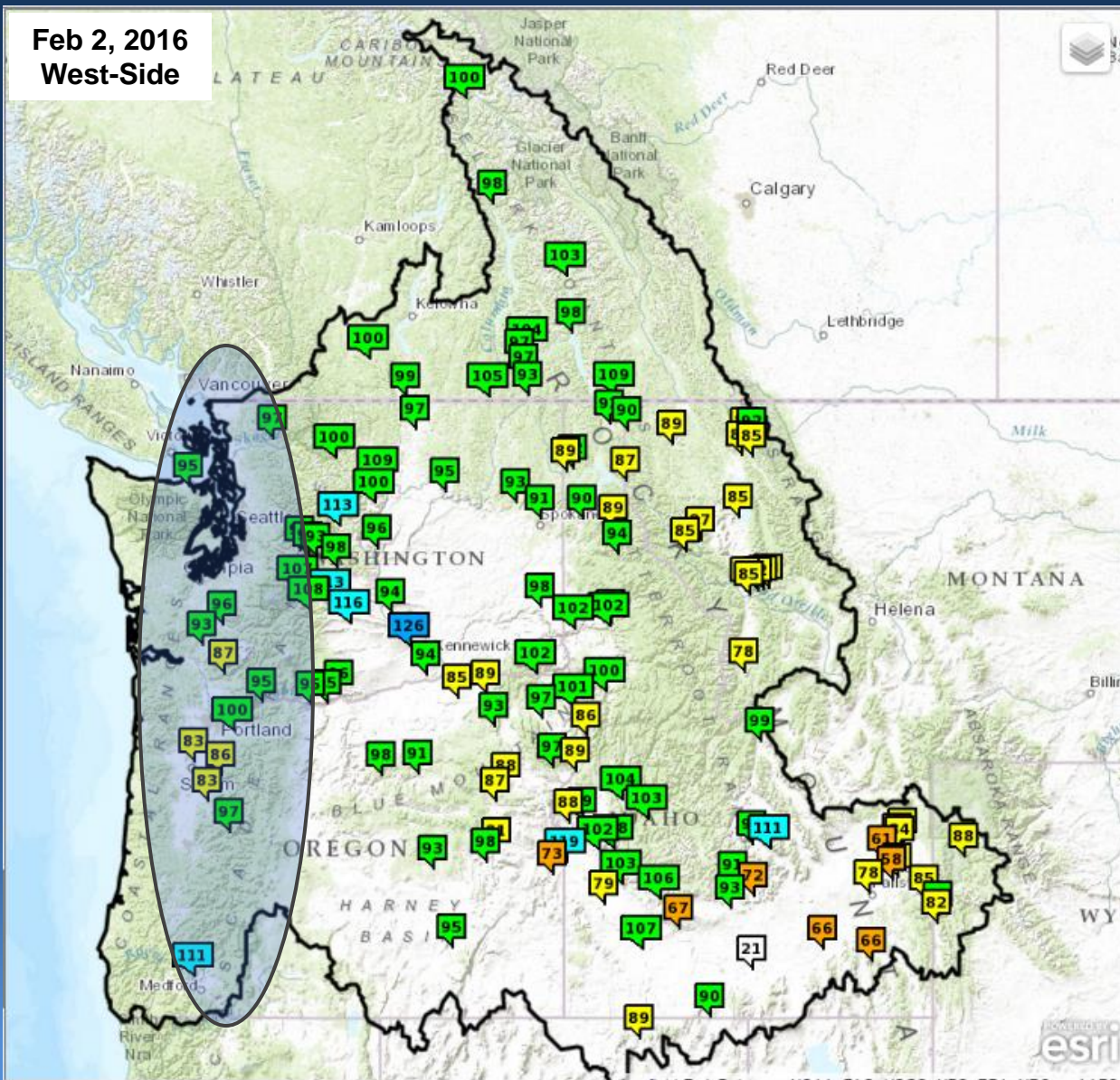


Official Water Supply Forecasts

www.nwrfc.noaa.gov/ws/



Feb 2, 2016
West-Side



WEST-SIDE LOCATION

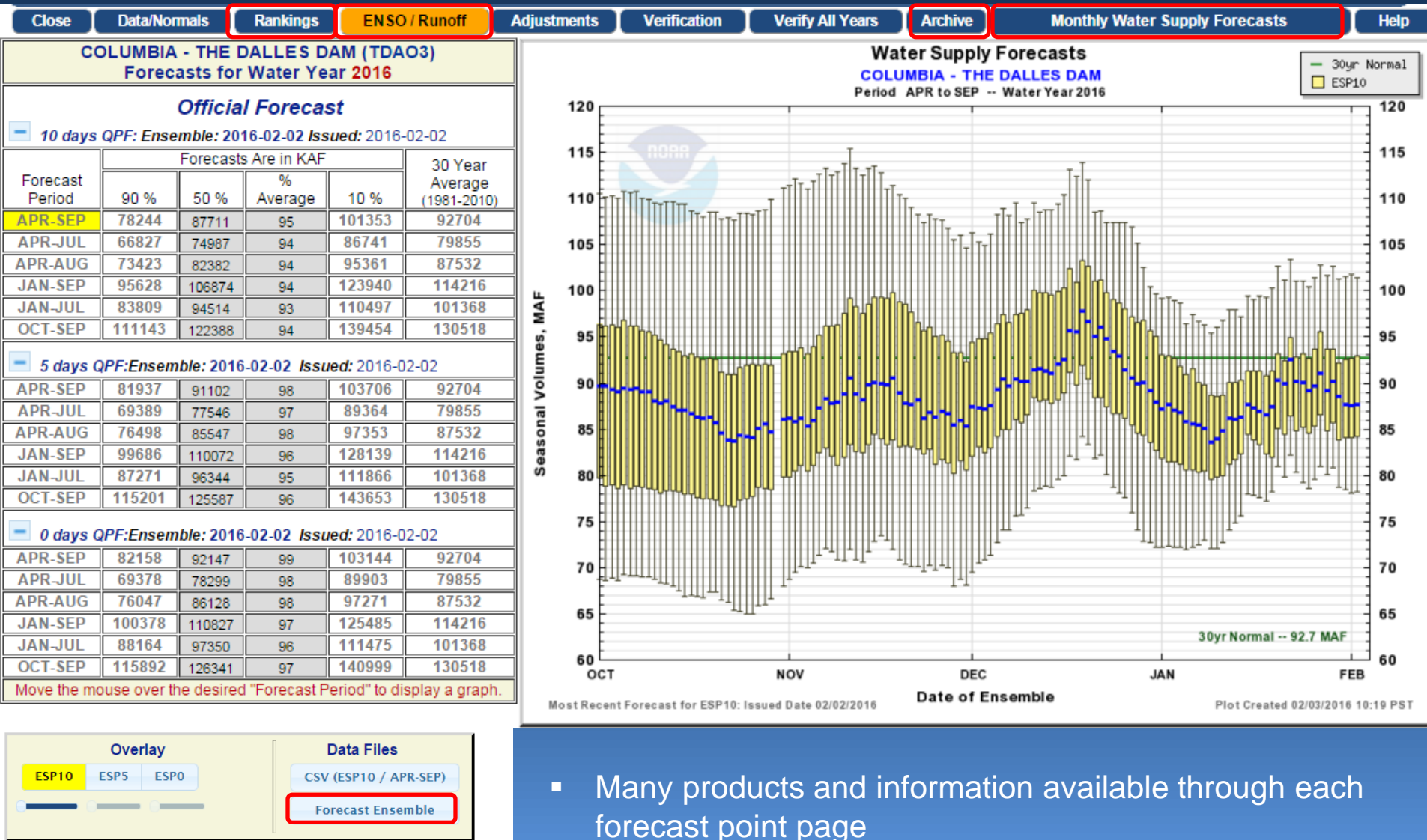
APR – SEP %
NORM

Skagit River – Concrete	97
Dungeness River – Sequim	95
Cowlitz River – Castle Rock	93
Lewis River – Merwin Dam	87
Clackamas River – Estacada	100
McKenzie River – Vida	97
South Santiam River – Waterloo	83
North Santiam River – Mehama	86
Willamette River – Salem	83
Rogue River – Raygold	111



Columbia River – The Dalles Dam

www.nwrfc.noaa.gov/water_supply/ws_forecasts.php?id=TDAO3

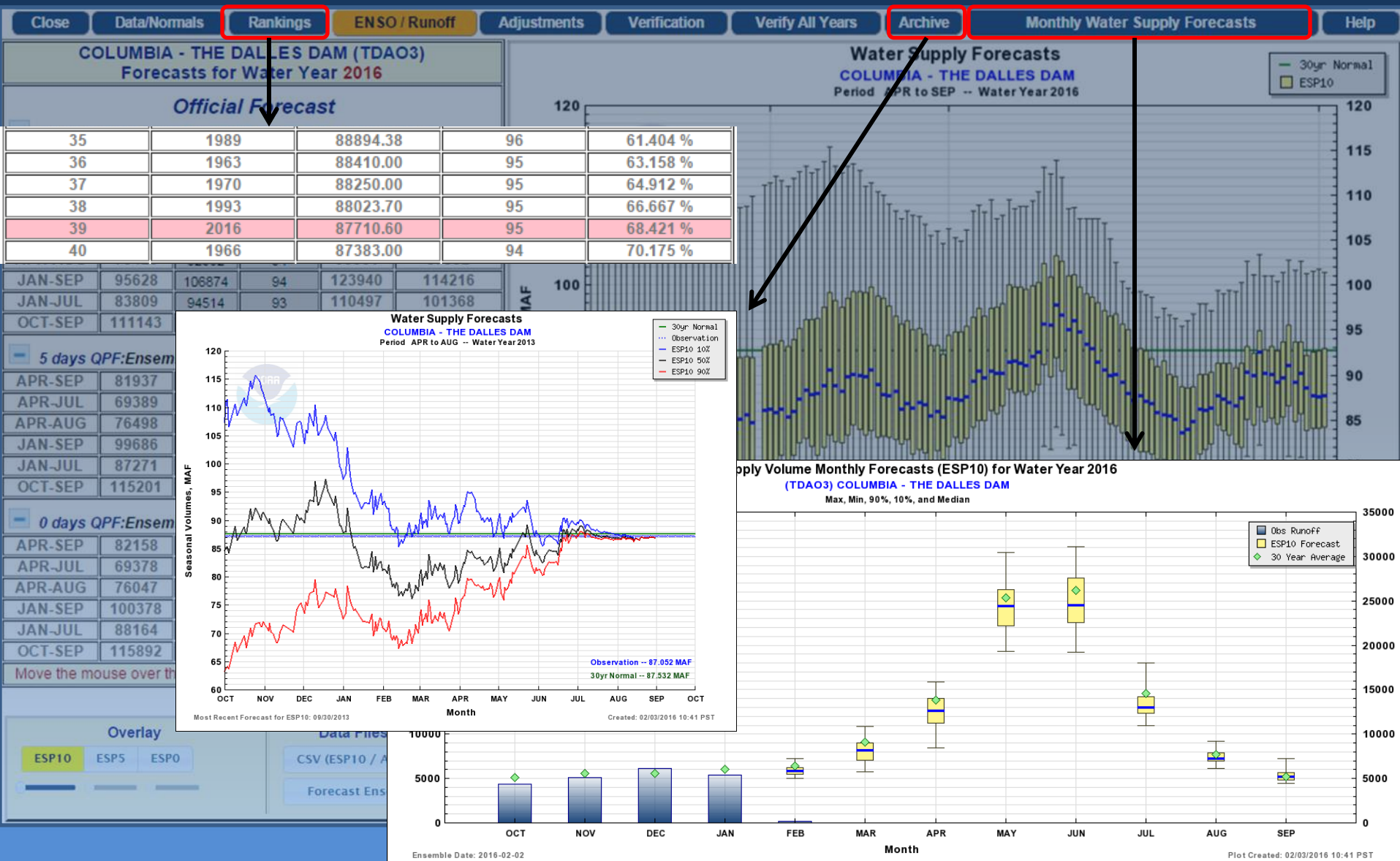


- Many products and information available through each forecast point page



Additional Products

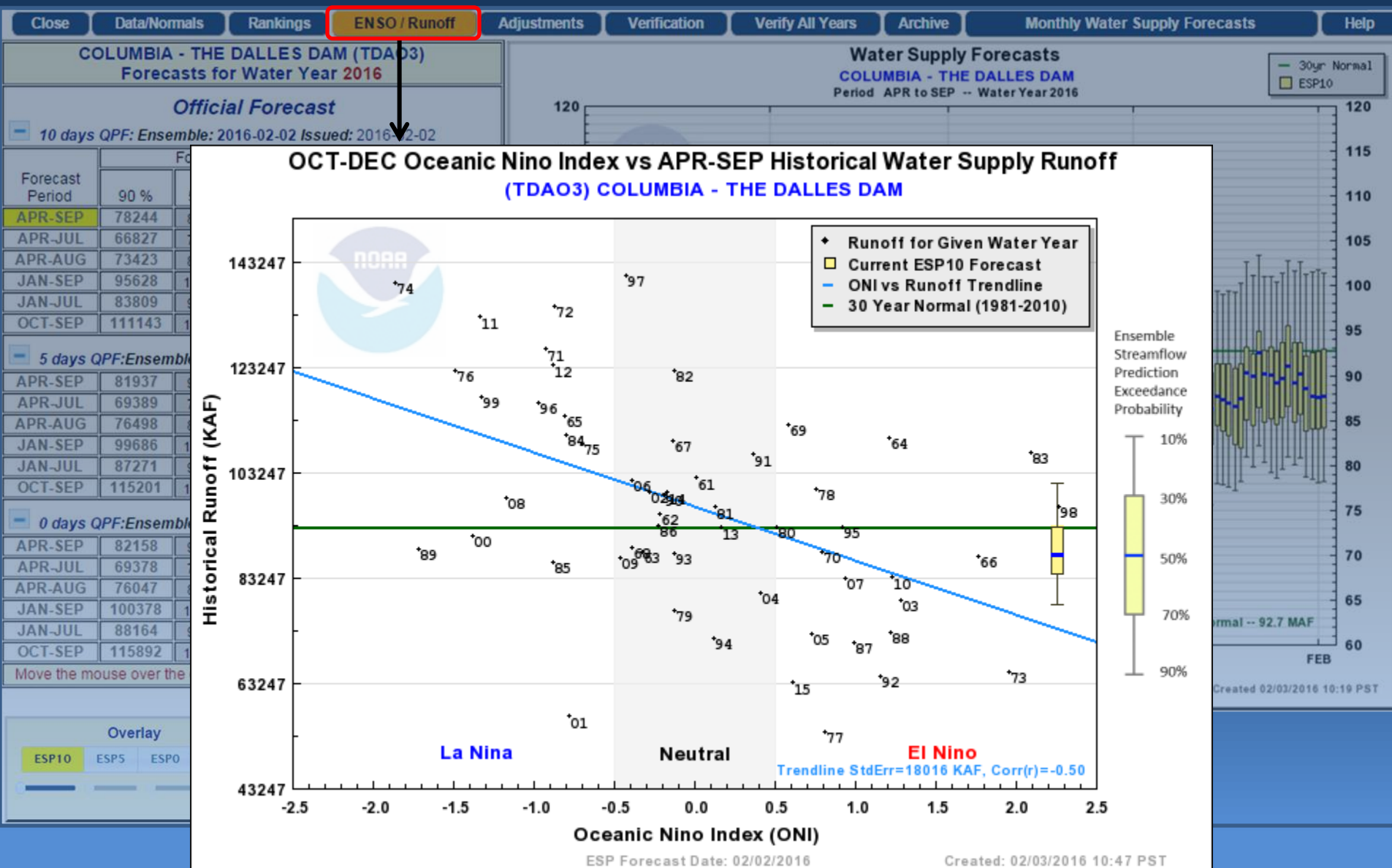
www.nwrfc.noaa.gov/water_supply/ws_forecasts.php?id=TDAO3





Additional Products

www.nwrfc.noaa.gov/water_supply/ws_forecasts.php?id=TDAO3





Additional Products



Northwest River Forecast Data Download

Home Close


- ESP Ensembles
 - NOTICE OF CHANGE
 - Water Supply
 - Natural
 - Unadjusted
- Forcings
- Runoff



Northwest Data Download

Home Close

- ESP Ensembles
- Forcings
 - Forecast Precipitation
 - Observed Precipitation
 - Forecast Temperature
 - Observed Temperature
- Runoff



Northwest River Forecast Data Download

Home Close

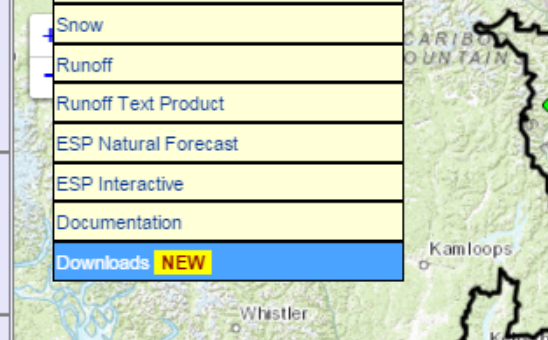
- ESP Ensembles
- Forcings
- Runoff
 - NOTICE OF CHANGE
 - Water Supply
 - Natural
 - Unadjusted

River and Hydrology	Water Supply	Observations
Please join us	Forecast Map	Water Supply Monday, February 1, 20 y, February 4, Registration look forward to
	Forecast Listing	
	Forecast Report	
	Forecast Text Product	
	Live Briefing Schedule	
	Precipitation/Temperature	
	Snow	
	Runoff	
	Runoff Text Product	
	ESP Natural Forecast	
ESP Interactive		
Documentation		
Downloads NEW		

Map Overlays

- ☒ NWRFC Boundary
- ☐ NWRFC Basins
- ☐ NWS HSAs
- ☐ Counties

ESP WS Volumes



- Can now download observed and forecasted precipitation, temperatures, and streamflows from our web
 - In .csv and .xml formats



Feb 2016 Water Supply Briefing

National Weather Service, Northwest River Forecast Center

Questions?

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www.nwrfc.noaa.gov/presentations/presentations.cgi

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